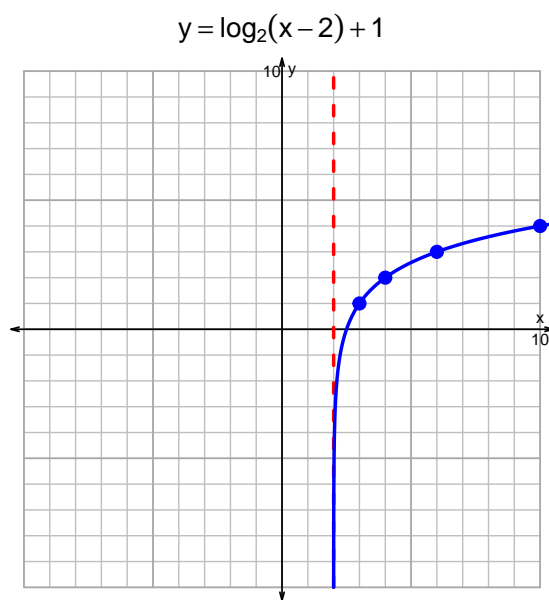
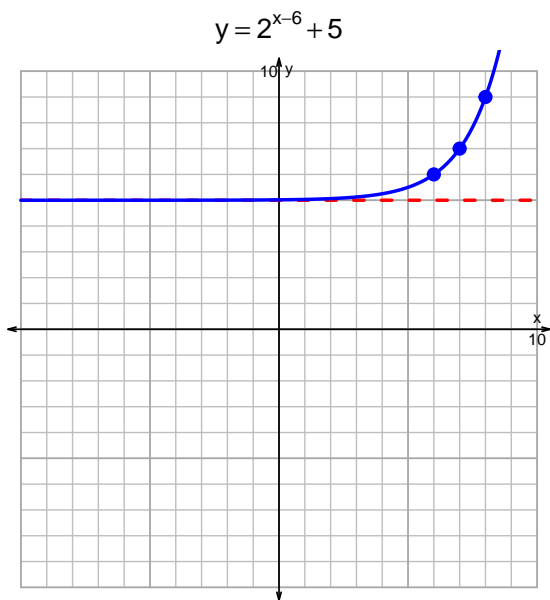


Name: _____

Date: _____

s18: EXP LOG (SLTN v328)

1. (10 pts) Graph $y = 2^{x-6} + 5$ and $y = \log_2(x-2) + 1$ on the grids below. Also, draw any asymptotes with dashed lines.



Somewhat useful hint: $2^3 = 8$, and thus $\log_2(8) = 3$.

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$-11 = \left(\frac{-5}{7}\right) \cdot 2^{-3t/4}$$

Divide both sides by $\frac{-5}{7}$.

$$\frac{11 \cdot 7}{5} = 2^{-3t/4}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{11 \cdot 7}{5}\right) = \frac{-3t}{4}$$

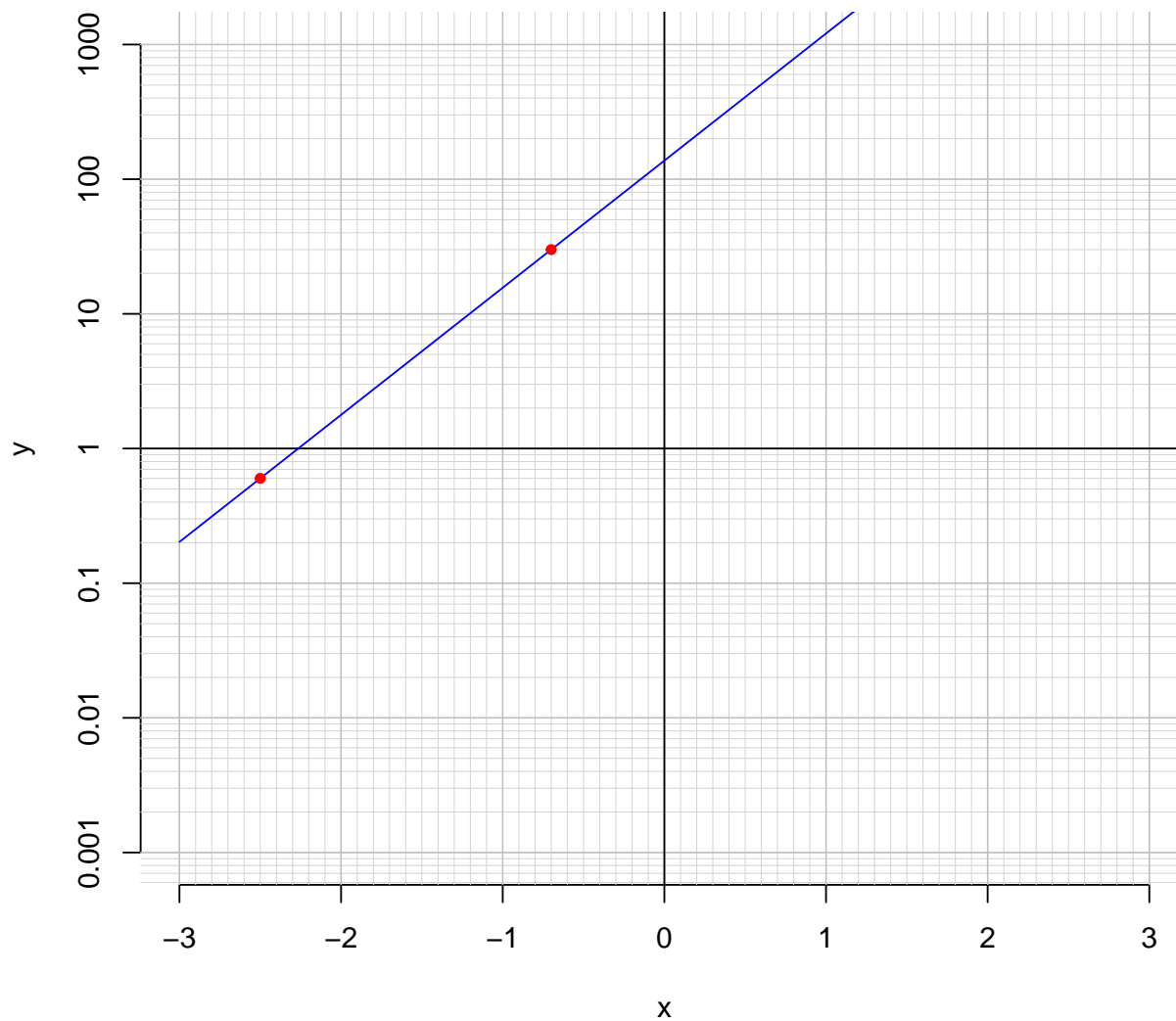
Divide both sides by $\frac{-3}{4}$.

$$\frac{-4}{3} \cdot \log_2\left(\frac{11 \cdot 7}{5}\right) = t$$

Switch sides.

$$t = \frac{-4}{3} \cdot \log_2\left(\frac{11 \cdot 7}{5}\right)$$

3. (10 pts) An exponential function $f(x) = 137 \cdot e^{2.17x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(-2.5)$.

$$f(-2.5) = 0.6$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{1}{2.17} \cdot \ln\left(\frac{x}{137}\right)$$

Using the plot above, evaluate $f^{-1}(30)$.

$$f^{-1}(30) = -0.7$$